Remarks

Claims 1-32 and 72-101 are pending in the application. Claims 33-71 have been canceled. Claims 1-6, 9, 11, 14, 18, 19, 21-26, 28-30, and 32, have been amended. New claims 72-101 have been added. No new matter has been added by virtue of this amendment. Reconsideration of the application as amended is requested.

Generic Claim and Election of Species

Claims 34-71 have been canceled as requested by the Examiner. Claim 1 has been amended to provide it as a generic claim by including the limits of claim 33, that was dependent on claim 1, and by moving element (c) to a new dependent claim.

Claim Rejections–35 U.S.C. § 112, second paragraph

The Examiner rejects claims 1-33 under 35 U.S.C. § 112, second paragraph, as being indefinite. The claims have been amended to fix the problems identified by the Examiner. Therefore the rejection under 35 U.S.C. § 112 has been traversed.

Claim Rejections--35 U.S.C. § 102

The Examiner rejects claims 1-33 under 35 U.S.C. § 102(b) as being anticipated by Arms. The Examiner states that "Arms discloses substantially all limitations of the present invention including providing a conductor wound in a coil 18 on a tube 15 (see Fig. 2, col. 3, lines 9-40), said coil 18 having a coil outer surface comprising insulation and opening a window in the insulation on the coil outer surface to expose conductor of the coil (see Fig. 2, which shows an opening window at center of the coil 18)."

Applicant would respectfully ask the Examiner to consider first, that nothing in the specification of Arms describes the center of coil 18 as having an opening in the insulation. There is no indicator numeral pointing to this center region, and no teaching that the insulation is open in this center region. Furthermore, in col. 3, lines 37 to 38, Arms states, "the coils 18 and 18a are attached (electrically) to flat, flexible pads 21, 21a and 21b **with coils leads 22., 22a, and 22b**. A flexible sheath 20 prevents excess bending of wire circuits 19." Since the attachment to Arms' substrate, wire circuits 19, is with coil leads 22, 22a, 22b, there is no reason to expose conductor of the coil with an opening window at the center of the coil 18. Arms teaches against this notion by stating that attachment to pads 21, 21a, 21b is with coil leads 22, 22a, 22b. Applicant believes that it may be merely an artifact of the drawing of coil 18 that center region of coil 18 looks

clear--but there is no teaching or suggestion of an opening in insulation in that region. In view of the attachment being with coil leads 22, 22a, 22b rather than by providing or using an opening in insulation, there is in fact no such opening in coil 18 of Arms.

Second, claim 1 has been amended to include the limit of claim 33, "dicing through said coil and through said tube to provide a plurality of short coils, wherein each said short coil has at least one said opening in said insulation." Arms provides teaching of processing individual short coils. He provides no teaching or suggestion of processing long coils and then dicing, as provided in claim 1, as amended.

Therefore, the rejection under 35 U.S.C. § 102(b) as being anticipated by Arms has been traversed.

Claim Rejections--35 U.S.C. § 103

The Examiner rejects claims 1-33 under 35 U.S.C. § 103 as being unpatentable over Arms in view of Bernstein. First, as amended, claim 1 also includes the limit of claim 33, "dicing through said coil and through said tube to provide a plurality of short coils, wherein each said short coil has at least one said opening in said insulation." Both Arms and Bernstein handle individual short coils in their processes. Bernstein teaches processing a short coil and opening insulation to form contacts in each short coil. It was applicant who invented the idea of using a long piece of coil, opening windows, and then dicing to form the shorter coils with contact openings, as described in claim 1, as amended. Thus, applicant found a way to greatly reduce costs by greatly reducing handling individual short coils. Neither Arms nor Bernstein teaches or suggests this limit.

In addition, it would only be by hindsight from the present invention that one would combine the references to achieve the invention described in claim 2 and claims 74-99. One would have to borrow the openings in insulation of Bernstein without borrowing his solid core. The selective borrowing requires understanding that a solid core is not needed to support the coil during the step of removing insulation to provide the opening. Arms teaches a tube supporting his coil but provides for contact with wire leads of the coil. It was applicant who first achieved understanding that the tube is adequate for supporting the coil while opening insulation, as provided in claim 1.

Thus, the rejection of claim 1, and claims dependent thereon, under 35 U.S.C. § 103 as being unpatentable over Arms in view of Bernstein has been traversed.

Prior Art References

Applicant's attorney has reviewed the prior art references made of record but not relied upon and finds that they are no more relevant than those relied upon.

It is believed that all the claims are in condition for allowance. Therefore, applicant respectfully requests favorable reconsideration. If there are any questions please call applicant's attorney at 802 864-1575.

Respectfully submitted,
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Version with markings to show changes made

IN THE CLAIMS:

Please cancel claims 33-71.

Please amend the following claim:

1. (Amended) A method of fabricating [a discrete coil] an electronic device, comprising the steps of:

a) providing [a conductor wound in a coil] a coil of conductor and an insulation [on a tube], said coil of conductor having a coil outer surface, said insulation on said coil outer surface [comprising insulation]; [and]

b) [opening a window in] forming openings in portions of said insulation on said coil outer surface [to expose] and exposing conductor of said coil for contacts; [a contact;] and

[c) providing a movable core within said tube for adjusting inductance of said coil.]

c) dicing through said coil to provide a plurality of short coils, wherein each said short coil has at least one said opening in said insulation.

2. (Amended) The method as recited in claim [1] 74, wherein said providing [a conductor] step (a) comprises the step of providing a tube and a wire, [said wire comprising conductor and insulation,] and winding said wire around said tube.

3. (Amended) The method as recited in claim [1] 2, wherein, in said providing step (a), said wire comprises two ends, wherein neither of said ends [is extended] extends from said coil for contacting.

4. (Amended) The method as recited in claim 1, further comprising the steps of:

[d)]e) providing a substrate; and

[e)]f) surface mounting said coil to said substrate.

5. (Amended) The method as recited in claim 4, wherein, in said providing step (e), said substrate comprises a printed circuit board, a ceramic substrate, a [flex] flexible material, or an integrated circuit.

6. (Amended) The method as recited in claim 4, wherein said surface mounting step [(e)] (f) comprises the step of electrically connecting conductor exposed in said [window] opening in said insulation to said substrate.

7. The method as recited in claim 6, further comprising the step of providing a solder or conductive polymer, wherein said electrical connecting step comprises joining with said solder or said conductive polymer.

8. The method as recited in claim 7, wherein said joining step comprises providing solder paste between said substrate and said conductor exposed in said window and heating to reflow said solder.

9. (Amended) The method as recited in claim 4, further comprising the step of [providing] mounting additional electronics on said substrate.

10. The method as recited in claim 9, further comprising the step of connecting said additional electronics to said coil.

11. (Amended) The method as recited in claim 10, further comprising the step of providing a housing for holding said coil, said substrate, and said additional electronics.

12. The method as recited in claim 11, further comprising the step of hermetically sealing said housing.

13. The method as recited in claim 11, further comprising the step of providing pins for external connection through said housing.

14. (Amended) The method as recited in claim 11, wherein said coil and said additional electronics comprise a sensor.

15. The method as recited in claim 14, wherein said sensor comprises a variable reluctance transducer.

16. The method as recited in claim 14, wherein said sensor is for measuring strain, displacement, acceleration, force, or pressure.

17. The method as recited in claim 14, further comprising the step of providing a circuit to correct for temperature variation.

18. (Amended) The method as recited in claim 17, wherein said circuit is integrated within said [package] housing.

19. (Amended) The method as recited in claim 17, wherein said circuit is located within signal conditioning electronics separate from said [package] housing.

20. The method as recited in claim 9, wherein said additional electronics provides excitation or synchronous demodulation.

21. (Amended) The method as recited in claim 9, wherein said additional electronics converts an ac waveform [from said bridge] to a dc voltage.

22. (Amended) The method as recited in claim 1, further comprising the step of [packaging] enclosing said coil in a [hermetic package] housing and hermetically sealing said housing.

23. (Amended) The method as recited in claim 1, wherein said step of [opening a plurality of windows] forming openings in portions of said insulation comprises [abrading said insulation, chemically etching said insulation, or] laser ablating said insulation.

24. (Amended) The method as recited in claim 23, wherein [in] said step of laser ablating said insulation, comprises directing light from [an excimer] a laser [is used] on said insulation.

25. (Amended) The method as recited in claim 23, wherein said coil comprises a plurality of turns of said wire and wherein [in] said step of laser ablating said insulation comprises opening [, each said window in] said [wire] insulation [extends] over a plurality of said turns of wire [wires of said winding].

26. (Amended) The method as recited in claim 23, wherein said step of laser ablating said insulation comprises ablating a ring shaped [window] opening in said [wire] insulation.

27. The method as recited in claim 1, wherein said insulation comprises polyimide.

28. (Amended) The method as recited in claim [1] 75, further comprising the step of providing a structure for holding position of said core within said tube.

29. (Amended) The method as recited in claim 28, further comprising the step of providing a structure for resetting position of said core within said tube.

30. (Amended) The method as recited in claim 29, wherein said structure for resetting position of said core within said tube comprises an electronically controllable clamp.

31. The method as recited in claim 30, wherein said electronically controllable clamp comprises a shape memory alloy.

32. (Amended) The method as recited in claim 29, wherein said structure for resetting position of said core further comprises a spring so said core can snap to a new position when said clamp is released.